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ABSTRACT

The influence of positive change in instructional effectiveness upon several affective characteristics of teachers was investigated. The focus of the study was upon the influence this change in effectiveness might have upon measures of teachers' feelings of responsibility for student achievement, feelings toward teaching, and teachers' self-concept. Fifty-two secondary school teachers participated in a workshop on mastery learning techniques. They agreed to teach two classes in the same subject area and grade level during the school term following their training. One of these classes was to be taught using mastery learning (mastery group), the other to be taught by whatever methods the teacher typically employed (control group). Before the workshop sessions, the teachers were given a three-part questionnaire on their feelings of responsibility for student achievement, their feelings toward teaching, and their confidence in their teaching ability. Following the school term, the teachers were again tested, and the achievements of their mastery and control students were evaluated. A high percentage of the teachers were found to have experienced positive change in their instructional effectiveness through mastery teaching. An analysis of results indicated that, as the teachers became more effective in their teaching, they tended to accept greater responsibility for the learning outcomes of their students and to like teaching much more but, at the same time, expressed diminished confidence in their teaching abilities. In post-testing, the teachers who chose not to use the mastery techniques expressed increased confidence in their teaching but revealed increasingly negative feelings about teaching. The implications of this study for inservice education are discussed. (JD)

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The Influence of Change in Instructional Effectiveness Upon the Affective Characteristics of Teachers

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ABSTRACT

This study was designed to assess the influence of positive change in instructional effectiveness upon several affective characteristics of teachers. Data were gathered from 117 intermediate and high school teachers, 52 of whom participated in an inservice workshop on Mastery Learning. Comparisons made through MANOVA procedures showed that those teachers who experienced positive change in the learning outcomes of their students expressed increased personal responsibility for both positive and negative student outcomes, increased affect toward teaching, but decreased confidence in their teaching abilities. Implications regarding the alterability of these teacher characteristics are discussed.

The Influence of Change in Instructional Effectiveness Upon the Affective Characteristics of Teachers

In recent years there have been many studies on the effectiveness of teachers and particularly the characteristics and behaviors of teachers that relate to effective instruction. Reviews of these studies, such as those conducted by McNeil and Popham (1973), Medley (1977) and Soar and Soar (1972), together with the results from large scale surveys such as the Beginning Teacher Evaluation Study (Fisher, et al. 1978), have helped to identify factors that consistently relate to student learning outcomes. Although the validity of some of these factors has been questioned (Coker, Medley, and Soar, 1980), others have been shown to be useful in efforts to help teachers improve the effectiveness of their teaching (Stallings, 1980). There has been very little research, however, on the effects upon teachers of change in their instructional effectiveness. Reports on inservice education programs and staff development efforts often contain anecdotal evidence of changes in teachers as a result of their experiences in particular programs. Stallings (1980), for instance, reported that after making recommended changes a teacher found "that the teaching became more fun" (p. 14). But few studies have assessed these effects in an organized or systematic way.

This study was designed to investigate the influence of positive change in instructional effectiveness upon several affective characteristics of teachers. The central question of the study was: As experienced teachers adopt more effective instructional practices and realize more positive learning outcomes on the part of their students, might specific affective changes be expected to result in these teachers? It was hypothesized

that teachers who experience a positive change in their instructional effectiveness would (a) assume greater personal responsibility for the learning outcomes of their students, (b) like teaching more and express more positive attitudes about various aspects of teaching, and (c) express greater confidence in their abilities as teachers.

Theoretical Framework

Over the past decade a wide variety of programs and curriculae have been developed specifically to enhance the instructional effectiveness of teachers. Some of the most successful among these efforts are programs centering around Mastery Learning instructional stragegies (Bloom, 1968, 1971). Reviews of Mastery Learning research indicate that these strategies can, in many instances, help teachers to dramatically increase the learning and resultant achievement of students in their classrooms (Block & Burns, 1976). In this study, the introduction of Mastery Learning strategies was employed as the means of altering the instructional effectiveness of teachers. The focus of the study, however, was upon the influence this change in effectiveness might have upon measures of teachers' responsibility for student achievement, affect towards teaching, and teaching self-concept.

Method

Subjects. The subjects for this study were 117 intermediate and high school level teachers from two metropolitan school systems. All of these teachers had volunteered to participate in an inservice education workshop dealing with Mastery Learning. Because of limited resources, however, only 52 teachers who taught in selected subject areas could take part in the workshop. For their participation in the workshop teachers were granted release time and received salary lane-placment credit. The remaining 65 teachers served as the control group.

All of the teachers in the sample had taught at the intermediate or high school level for at least three years. The average number of years teaching experience was 9.8.

Procedure. Before the start of the inservice workshop sessions, all 117 teachers who had volunteered to participate were administered a three-part questionnaire with parts randomly ordered in questionnaire booklets. One part contained the Responsibility for Student Achievement scale (RSA) developed by Guskey (1981). This scale contains 30 alternative-weighted items that assess teachers' beliefs in their own control of factors influencing the academic successes and failures of their students. Two subscale scores are derived from the RSA, one assessing self-responsibility for classroom successes (R+), and one for classroom failures (R-). The R+ and R- subscales are reported to have an internal reliability of .79 and .88, respectively. Subscale scores are a mean percentage rating of items in that scale and hence, scores can range from 0 to 100 percent.

A second part of the questionnaire contained a scale designed to assess affect toward teaching; that is, how much teachers like teaching and how positively or negatively they feel about various aspects of teaching. This scale contains 30 Likert-type items, most of which were adopted from items in the Self-Observational Scales (SOS) for students (Katzenmeyer and Stenner, 1974). Each item on this scale asks teachers to indicate their feelings in regard to particular statement. Five options are available for the rating, ranging from Strongly Disagree to Strongly Agree. Statements are both positive and negative. For example, a positive item would be, "I enjoy learning about new classroom techniques,"

while a negative item would be, "I often get bored in discussions about education." The weights assigned response options for positive items are reversed for negative items. Scores can thus range from 0 to 120. Pilot testing of this scale showed it to be fairly reliable, with a Cronbach alpha coefficent equal to .85.

A third scale in the questionnaire assessed teaching self-concept. This scale also consists of 30 Likert-type items adapted from similar behavioral-based self-concept items developed in the research of Brookover (1973). Each item asks teachers to indicate their feelings in relation to particular behaviors or characteristics relevant to teaching. Items are both positive and negative, and are rated on a five-point scale from Strongly Disagree to Strongly Agree. An example of a positive item would be, "I am very proud of my performance as a teacher," while a negative item would be, "I sometimes have doubts about the effectiveness of my teaching." Scores on the scale can range from 0 to 120. Pilot testing of this scale showed it also to be fairly reliable, with a Cronbach alpha equal of .84.

The 52 teachers who participated in the workshop each agreed to teach two classes in the same subject area and grade level during the school term following their training. The cooperation of building principals was secured in order to facilitate this scheduling. One of these classes was to be taught using Mastery Learning (mastery), while the other was to be taught by whatever methods and procedures the teacher typically employed (control).

The use of Mastery Learning required no major changes in teachers' instructional techniques. In fact, lessons and class presentations in

mastery and control classes were most likely identical. Also, instruction in both mastery and control classes was teacher-paced. The primary difference between these classes was the feedback and corrective activities provided to students in mastery classes. While students in both mastery and control classes were administered regular quizzes to check on their learning progress, the quizzes administered in mastery classes (referred to as formative tests) were paired with specific corrective activities. These correctives were designed to help students remediate learning problems or difficulties identified by errors made on the quizzes. Students in the mastery classes were provided opportunities to work on corrective activities and were then administered a second quiz or formative test to check on the success of the corrective work. The addition of this feedback and corrective process was the primary distinction between the instructional format in mastery classes compared to that in control classes.

After the teachers who participated in the workshop had the opportunity to use Mastery Learning in their classes for one school term (an academic semester), all 117 teachers were again asked to complete the same three-part questionnaire. Teachers' responses from these two administrations of the questionnaire were the principal data for the study.

Results

Of the 52 teachers who participated in the workshop on Mastery Learning, 44 used these strategies in classes during the school term following their training. The eight teachers who did not use the new strategies reported either scheduling difficulties or simply that they chose not to.

Although students in the classes assigned to teachers in the study were heterogeneously grouped, teachers administered a short content-related

pretest to each of their classes to assure the original equivalence of the classes. Comparisons of class means showed that there were no statistically significant differences between the class pairs for any of the 44 teachers. The number of students per class ranged from 21 to 34. However, within teacher differences in class size (between class pairs) were typically quite small.

The degree of change in instructional effectiveness was determined by comparing each teachers' mastery and control class in terms of two student achievement measures. The first was the percentage of students in each class receiving a high (A or B) course grade. Identical standards for grading were to be employed in both classes. The second measure was the average percent correct on a common course examination. If a larger percent of students received high course grades and the average percent correct on the course examination was greater in a teacher's mastery class than in the control class, that teacher was classified as experiencing a positive change in his/her instructional effectiveness. If a larger percent of students received high course grades in the control class or if the average percent correct on the course examination was greater in the control class, that teacher was classified as experiencing little or no change in his/her instructional effectiveness. Using these criteria, 34 of the 44 teachers were found to have experienced positive change in their instructional effectiveness. The ten teachers classified as having experienced little or no change included both male or female teachers and were fairly evenly dispersed among subject areas and grade levels. Mean differences between the mastery and control classes of these two groups of teachers on the criterion outcome measures are illustrated in Table 1.

(Insert Table 1)

The distinction between the positive change and no change groups meant that there were four groups of teachers among which comparisons could be made. These four groups were: (1) teachers who attained a positive change in the learning outcomes of their students, (2) teachers who attained no change in the learning outcomes of their students, (3) teachers received the training but did not implement the new strategies, and (4) teachers who did not receive the training.

The means and standard deviations of measures from the pre- and post-questionnaires for these four groups of teachers are illustrated in Table 2. In order to compare differences between the groups, two multivariate analyses of variance were performed, one on pre-questionnaire measures and another on post-questionnaire measures. In these analyses teacher group was the one independent factor; scores from the scales included in the questionnaires were the dependent measures. The intercorrelations among the four scale scores for both pre- and post-questionnaires are shown in Table 3.

Insert Tables 2 and 3

Results from the multivariate analyses of the pre- and post-questionnaires are presented in Table 4. These analyses showed that initially there were no statistically significant differences among the teacher groups. All of the groups were comparable in measures of responsibility for positive outcomes, responsibility for negative outcomes, and affect toward teaching. However, those teachers who did not use the new strategies expressed somewhat greater confidence in their teaching abilities than did any of the other groups of teachers.

Analyses of the post-questionnaire measures indicated that resultant differences among the teacher groups were statistically significant. Specifically, those teachers who had experienced a positive change in the learning outcomes of their students felt more responsible for both positive and negative student outcomes and expressed more positive attitudes toward teaching than did the other groups of teachers. Contrary to what had been hypothesized, however, these teachers expressed decreased confidence in their teaching abilities.

Insert Table 4

Interestingly, statistically significant differences were also found for those teachers who did not use the new strategies. Teachers in this group expressed more negative attitudes toward teaching than the other groups of teachers, but also expressed much greater confidence in their teaching abilities. These differences are illustrated more clearly in Figures 1-4.

Discussion

This study was designed to determine the influence of change in institutional effectiveness upon selected affective characteristics of teachers. As had been hypothesized, positive change in instructional effectiveness was found to be related to increased responsibility for both positive and negative student learning outcomes, and to more positive affect toward teaching. Contrary to what had been hypothesized, however, positive change in instructional effectiveness was found to be related to more negative teaching self-concept. In other words, as these teachers become more effective in their teaching, they tended to accept greater

responsibility for the learning outcomes of their students and tended to like teaching much more but, at the same time, expressed diminished confidence in their teaching abilities.

Although appearing somewhat anomalous at first, these results are quite reasonable in this context. All of the teachers in the sample were experienced classroom veterans. As such it is likely that most had fairly well established repertoire of instructional techniques and felt fairly confident of their abilities as teachers. Then, suddenly, some of these teachers found that through minor alterations in their teaching procedures, their instruction could become more effective and more of their students were able to learn well. This was probably a somewhat humbling experience. That is, to suddenly gain proof that that you can do better is likely to disrupt your confidence that you are as good as you can be. It is likely that these teachers felt the high degree of confidence they expressed earlier in their teaching abilities was misgiven.

The results from this study also indicate that participating in the inservice training and implementing the new strategies had little effect on these affective characteristics of teachers in the absence of positive change in instructional effectiveness. When there was no change in the learning outcomes of students, teachers' responsibility for student achievement, affect toward teaching, and teaching self-concept all remained fairly stable. This was also the case for the control group of teachers who did not participate in the inservice training. Thus it appears that inservice training and the implementation of new strategies alone are insufficient conditions for affective change in teachers. Only when teachers gain evidence of positive change in student learning outcomes do these affective changes result.

Another interesting finding was the change among teachers who took part in the inservice training but did not implement the new strategies. These teachers initially expressed greater confidence in their teaching abilities than other groups of teachers, and expressed a dramatic increase in confidence over the school term. Paired with this increased confidence, however, was a sharp decrease in measures of their affect toward teaching. While scheduling and administrative problems prevented some of these teachers from implementing the new strategies, it is likely that for others, perhaps most, it was a matter of personal choice. Implementing the new strategies required extra work that perhaps they were unwilling to take on. It seems probable that in justifying their decision to not implement the new strategies, these teachers would express increased confidence in their teaching abilities. In other words, why try something new that requires extra work when you are already such a very good teacher? Being able to do something well, however, does not necessarily imply that it is enjoyable. Although these teachers expressed great confidence in their teaching abilities, they also indicated increasingly negative feelings about teaching.

Although this study was confined to inservice training in Mastery Learning strategies, it is believed the results may be applicable to any inservice education or staff development effort targeted at improving the instructional effectiveness of teachers. It is a commonly held belief that inservice education can lead to changes in teachers' perceptions and affective characteristics, which in turn influence the learning outcomes of their students. This is particularly true of programs dealing with "teacher burnout." The results of this investigation indicate, however, that it is evidence of change in the learning outcomes

of students that leads to affective changes in teachers. In other words, change in the affective characteristics of teachers results only when teachers see positive results in terms of their students. Rather specific student achievement outcomes were employed in this study to determine change in students' learning. But undoubtedly other student variables such as increased cooperation among students, greater student involvement in learning activities, more time spent in learning tasks, more positive student attitudes toward the class, and the like, are equally important. What is central is that evidence of these changes in students intercedes between the inservice education experience and change in teachers' affective characteristics.

The results of this study imply that the key to a successful inservice education effort may lie not so much in the program itself, but in helping teachers achieve desired learning outcomes on the part of their students after the initial training takes place. Particularly in regard to an inservice program which involves new instructional procedures or materials, it is important that teachers be helped and receive support at the implementation stage.

Further research in this area of teacher change is necessary. In particular, research on ways to motivate and stimulate teachers to try out new instructional procedures, and to help them gain systematic feedback on the learning of their students is essential. Hopefully this study has provided a useful framework for viewing the process of teacher change.

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Table 1

Mean Differences and Standard Deviations for Two of the Groups of Teachers on Selected Student Outcome Measures

Difference Between Mastery and Control Classes	Positive Change Group (n=34)		No Change Group (n=10)	
	$\bar{X}$	(SD)	$\bar{X}$	(SD)
% Receiving High Course Grades	+17.86	(5.06)	-3.14	(1.89)
% Correct on Course Examinations	+11.17	(3.83)	-1.97	(.97)

Table 2

Means and Standard Deviations of Measures on Selected Affective Variables

Variable	Positive Change Group 1 (n=34)		No Change Group 2 (n=10)		Not Used Group 3 (n=8)		Control Group 4 (n=65)	
	$\bar{X}$	(SD)	$\bar{X}$	(SD)	$\bar{X}$	(SD)	$\bar{X}$	(SD)
RSA - Positive								
Pre	64.08	(8.72)	59.80	(8.86)	61.01	(10.71)	60.57	(10.32)
Post	79.01	(7.12)	61.47	(8.75)	61.13	(10.08)	60.08	(9.40)
RSA - Negative								
Pre	52.03	(10.44)	51.72	(11.03)	51.85	(11.37)	51.08	(9.21)
Post	61.23	(10.52)	47.73	(11.22)	52.36	(11.05)	50.17	(8.86)
Affect Toward Teaching								
Pre	54.38	(6.26)	53.57	(5.76)	51.62	(5.81)	53.43	(5.71)
Post	56.38	(4.86)	50.79	(6.89)	38.67	(7.56)	51.23	(6.38)
Teaching Self-Concept								
Pre	49.58	(8.14)	50.56	(7.96)	61.13	(10.38)	51.69	(12.15)
Post	45.23	(7.37)	54.81	(6.54)	78.16	(8.93)	53.84	(10.84)

Table 3

Intercorrelations Among Measures of Selected Affective Variables

Variable	RSA-Positive	RSA-Negative	Affect Toward Teaching	Teaching Self-Concept
RSA Positive		.233	.485	-.510
RSA Negative	.341	Post-Measures / Pre-Measures	.330	-.062
Affect Toward Teaching	.427	.251		-.638
Teaching Self Concept	-.481	-.173	-.602	

Table 4

Summary of Multivariate Analyses of Variance

Source of Variation	df		Tests of Significance			
		Multivariate F	Univariate F's			
			R+	R-	Affect Toward Teaching	Teaching Self-Concept
Constant	1	--	--	--	--	--
Group (pre-questionnaire)	3	0.97	1.08	0.08	0.52	2.52
Group (post-questionnaire)	(3)	15.07*	36.34*	10.92*	18.99*	29.17*
			Univariate Mean Squares			
Total	117	Pre-questionnaire	95.88	97.57	34.64	116.01
		Post-questionnaire	77.24	94.37	37.27	82.21

*$p < .001$

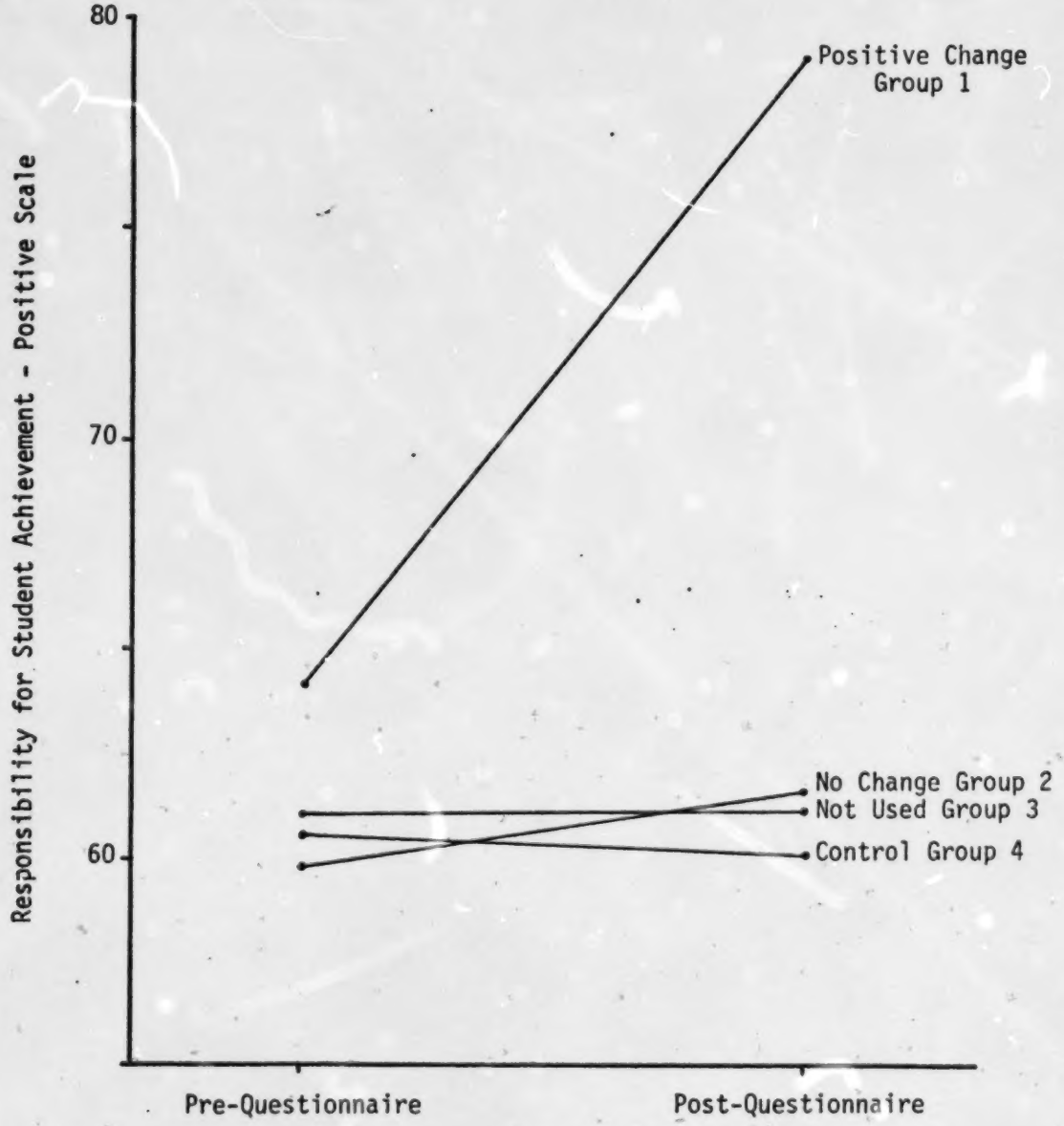
Figure Captions

Figure 1: Pre- and post-questionnaire measures of positive RSA scale scores among four teacher groups.

Figure 2: Pre- and post-questionnaire measures of negative RSA scale scores among four teacher groups.

Figure 3: Pre- and post-questionnaire measures of affect twoard teaching scores among four teacher groups.

Figure 4: Pre- and post-questionnaire measures of teaching self-concept scores among four teacher groups.


80
70
60
Responsibility for Student Achievement - Positive Scale
Positive Change
Group 1
No Change Group 2
Not Used Group 3
Control Group 4
Pre-Questionnaire
Post-Questionnaire

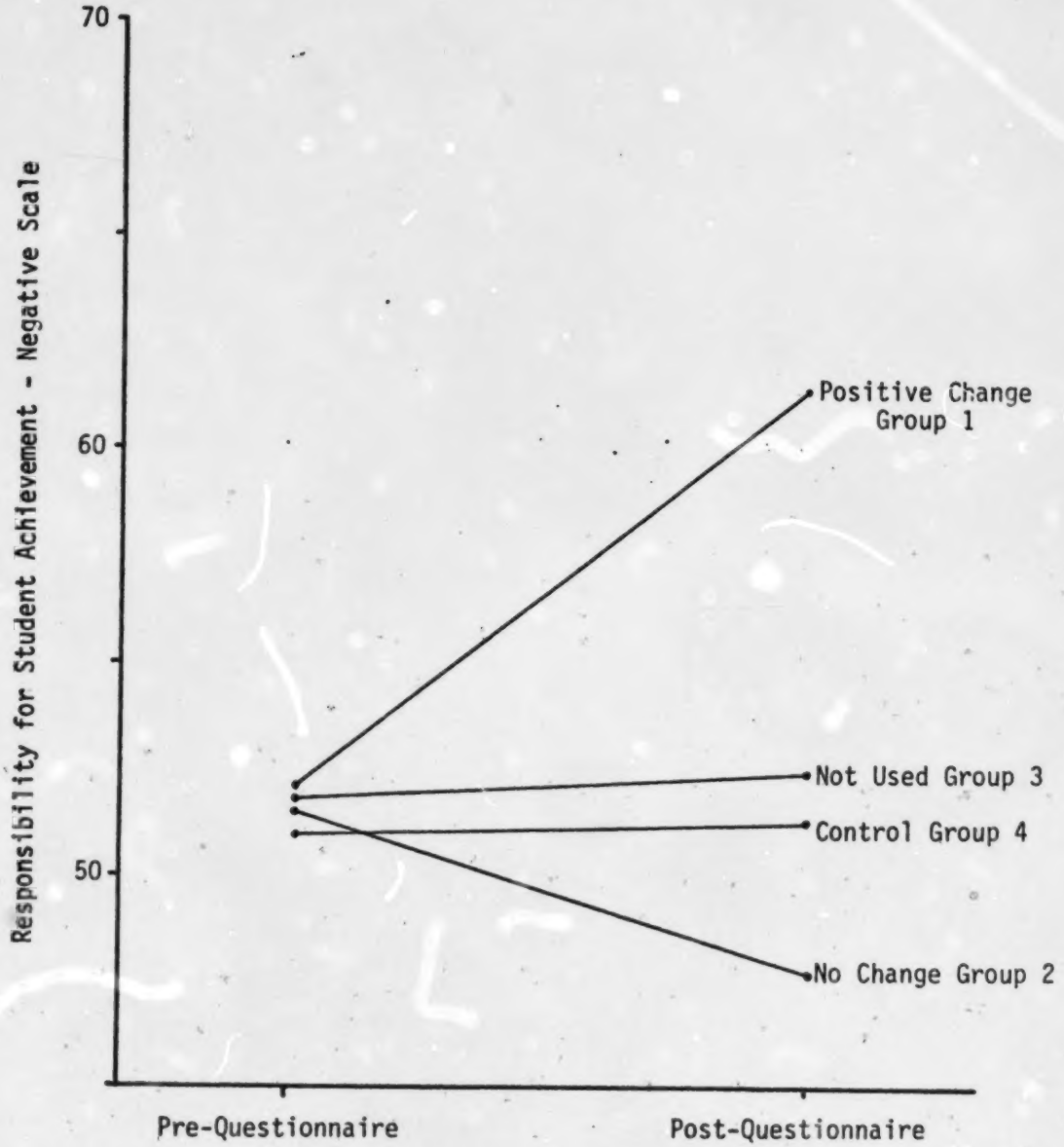

70
60
50
Responsibility for Student Achievement - Negative Scale
Positive Change
Group 1
Not Used Group 3
Control Group 4
No Change Group 2
Pre-Questionnaire
Post-Questionnaire

fig. 3

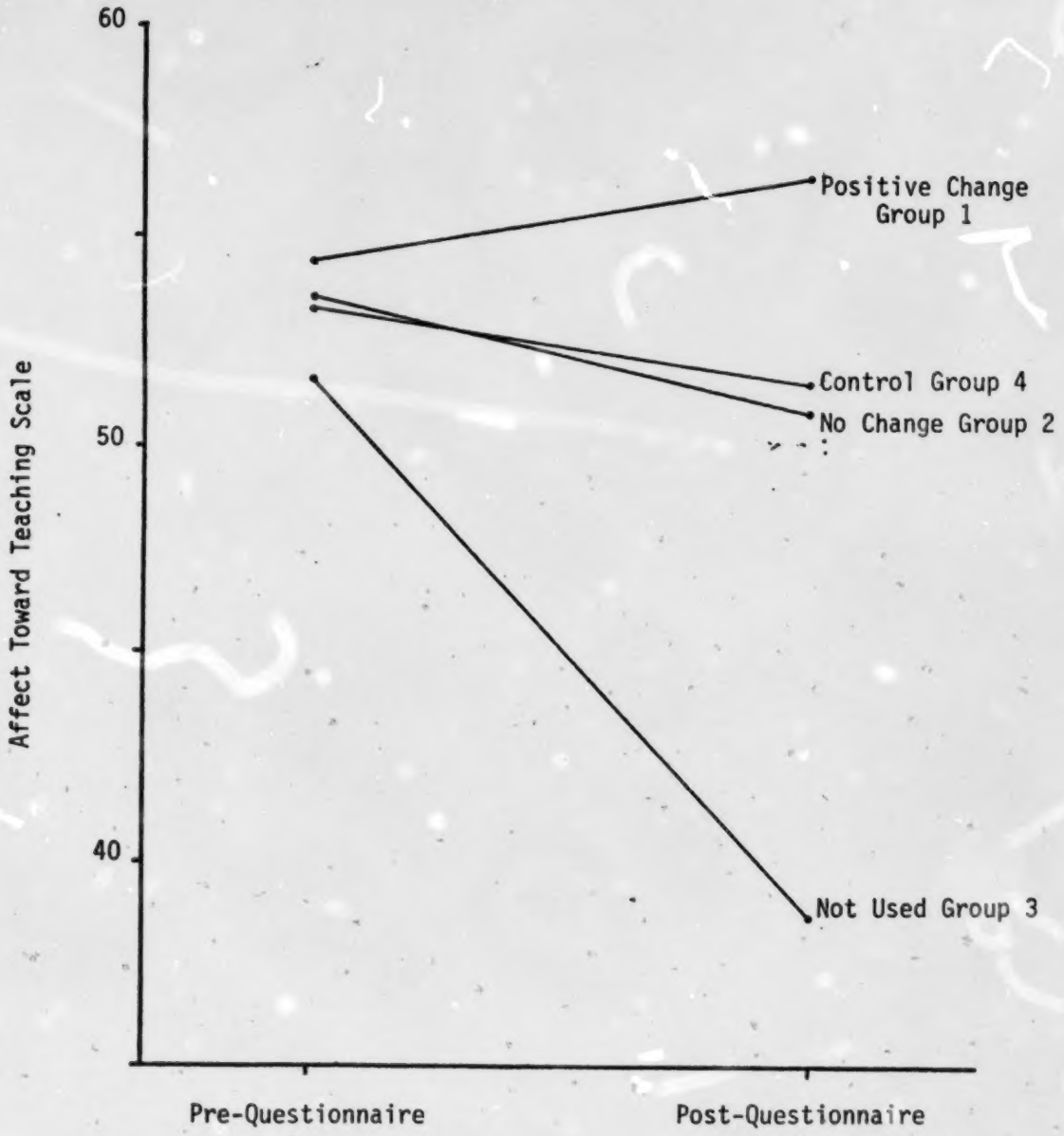
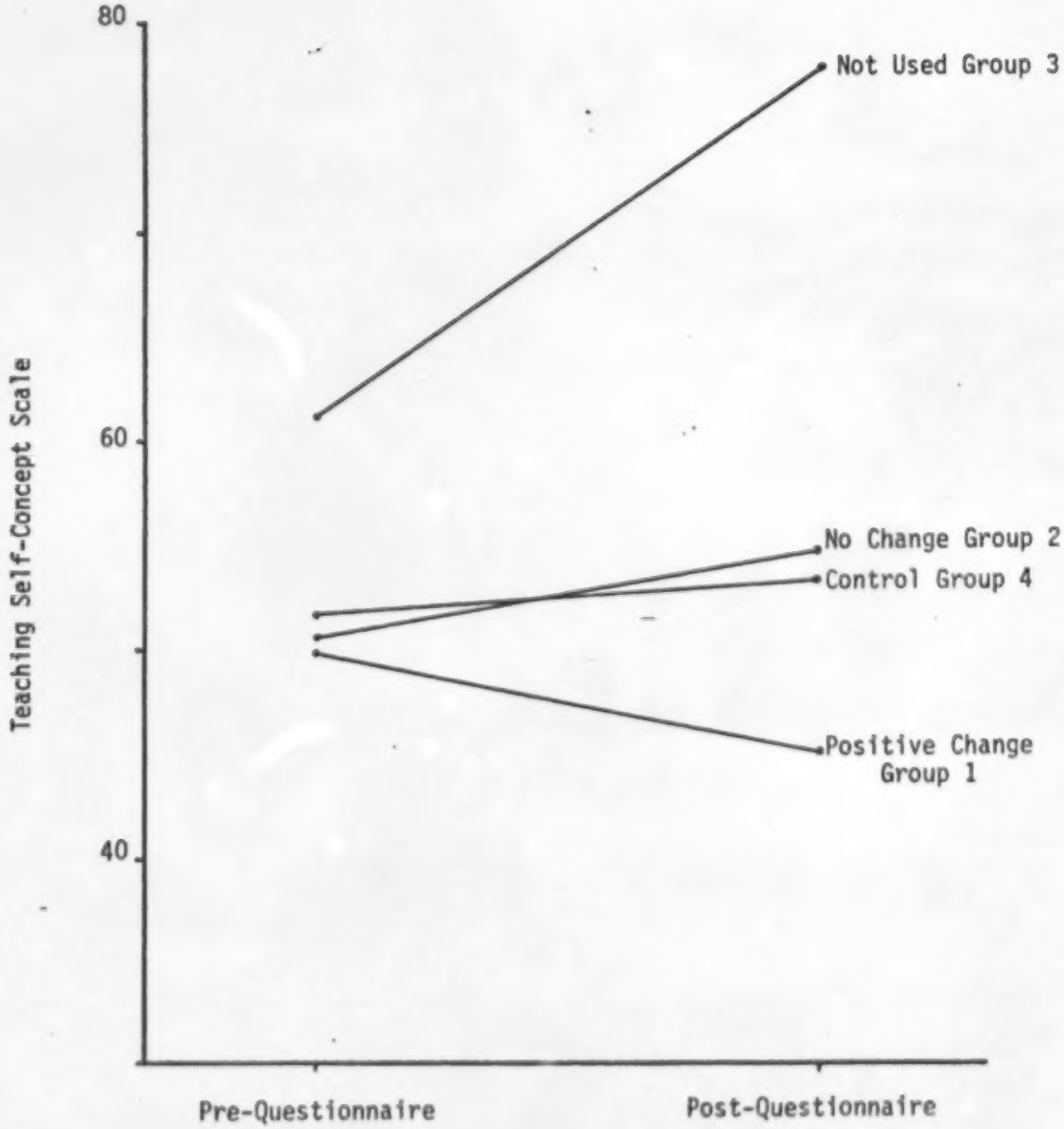

60
50
40
Affect Toward Teaching Scale
Positive Change
Group 1
Control Group 4
No Change Group 2
Not Used Group 3
Pre-Questionnaire
Post-Questionnaire

fig. 4


80
60
40
Teaching Self-Concept Scale
Not Used Group 3
No Change Group 2
Control Group 4
Positive Change
Group 1
Pre-Questionnaire
Post-Questionnaire